

REMARKS/ARGUMENTS

Reconsideration of the above-identified application in view of the present amendment is respectfully requested. Claims 1-8 and 12-26 are pending. Claims 9-11 and 22-23 are canceled and claims 25-26 are added. Claim 12 is amended to provide proper antecedent basis to the phrase "associated criterion".

Claims 1-5, 7, 9, 13-16, 18, and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dostoomian in view of JP 63130272 and Shepard. Claims 1 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over JP 63130272 in view of Moores and Change. Claim 1 is amended to recite that the first and second pieces are of plastic material and that the second plastic piece is transmissive to a laser beam. Claim 1 is also amended to recite an additional step of providing a feedback signal to a weld controller in response to determining that a characteristic fails to meet an associated criterion and modifying the heating in response to said feedback signal.

Neither Dostoomian nor JP 63130272 nor Shepard nor any of the other prior art either alone or in combination disclose or suggest these features. By contrast, Dostoomian discloses metallic worksheets 6 and 8 that are welded together by welding tips 2, 4 disposed in coaxial alignment on opposite sides of the worksheets 6, 8. Neither worksheet is transmissive to a laser beam as claimed by claim 1. Dostoomian also fails to teach the step of providing a

feedback signal to a weld controller in response to determining that a characteristic fails to meet an associated criterion and modifying the heating in response to said feedback signal.

JP 63130272 discloses forming a weld by an arc 11 from an electrode 8 on a material 9. JP 63130272 fails to disclose or suggest that the material 9 is transmissive to a laser beam as claimed by claim 1. JP 63130272 also fails to teach the step of providing a feedback signal to a weld controller in response to determining that a characteristic fails to meet an associated criterion and modifying the heating in response to said feedback signal.

Further, if the proposed combination "would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (MPEP §2143.01).

In this respect, it is not obvious to modify Dostoomian in view of JP 6313027 and Shepard to provide a method for monitoring the quality of a weld being formed between first and second pieces of material as claimed in claim 1, because such a modification of Dostoomian would change the principle operation of Dostoomian. In particular, Dostoomian discloses that the welding tip 2 of the welding machine has a tapered end 30 that makes contact with a contact surface 32 of the worksheets to be welded (See Col. 8, line 40). Thus, during the welding, the welding region 10 of the worksheet is covered by the welding tip 2, which prevents obtaining a thermal image

using a camera from either the JP 6313027 or the Shepard reference. Therefore, Dostoomian must be modified to space the welding tip 2 a good distance from the worksheet in order to allow the wavelengths from a camera to obtain a proper thermal image of the weld. Such a modification would prevent the welding of the worksheet because the welding tip 2 no longer makes the necessary contact with the contact surface 32 of the worksheets. Thus, the teachings of the Dostoomian, JP 6313027, and Shepard references are not sufficient to render claim 1 prima facie obvious.

It is also not obvious to modify JP 6313027 in view of Moores and Chang to provide method for monitoring the quality of a weld being formed between first and second pieces of material as claimed in claim 1. Moores discloses a shielding hood 10 that is constructed to provide the necessary low turbulent flow of shielding gas around the weld regions (See Col 1, lines 37-43 and Col. 2, lines 4-17). However, to modify JP 6313027 in view of teachings of Moore would change the principle operation of JP 6313027, because the heating shield of Mooore prevents obtaining a thermal image using a camera from the JP 6313027. Moore teaches away from such a combination, because the shielding hood 10 is needed to provided the low turbulent flow of shielding gas around the weld regions during the welding process. Thus, the teachings of the JP 6313027, Moore, and Chang references are not sufficient to render claim 1 prima facie obvious.

Therefore, in view of the above-mentioned reasons, Claim 1 is allowable. Claims 2-8 and 12 depend from claim 1 and are

therefore allowable as depending from an allowable claim and for the specific features recited therein.

Claim 13 is amended to recite that the second plastic piece is transmissive to a laser beam. Claim 13 is also amended to recite that the step of heating the first and second pieces at their location of abutment is performed by directing the laser beam over the path of the weld pool multiple times.

Neither Dostoomian nor JP 63130272 nor Shephard nor any of the other prior art either alone or in combination discloses or suggests these features. By contrast, Dostoomian discloses metallic worksheets 6 and 8 that are welded together by welding tips 2, 4 disposed in coaxial alignment on opposite sides of the worksheets 6, 8. Neither worksheet is transmissive to a laser beam as claimed by claim 13. Dostoomian also fails to disclose or suggest that the step of heating the first and second pieces at their location of abutment is performed by directing the laser beam over the path of the weld pool multiple times.

JP 63130272 discloses forming a weld by an arc 11 from an electrode 8 on a material 9. JP 63130272 fails to disclose or suggest that the material 9 is transmissive to a laser beam as claimed by claim 13. JP 63130272 also fails to disclose or suggest that the step of heating the first and second pieces at their location of abutment is performed by directing the laser beam over the path of the weld pool multiple times.

Further, if the proposed combination "would change the principle of operation of the prior art invention being

modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (MPEP \$2143.01).

In this respect, it is not obvious to modify Dostoomian in view of JP 6313027 and Shepard to provide a method for monitoring the quality of a weld being formed between first and second pieces of material as claimed in claim 13, because such a modification of Dostoomian would change the principle operation of Dostoomian. In particular, Dostoomian discloses that the welding tip 2 of the welding machine has a tapered end 30 that makes contact with a contact surface 32 of the worksheets to be welded (See Col. 8, line 40). Thus, during the welding, the welding region 10 of the worksheet is covered by the welding tip 2, which prevents obtaining a thermal image using a camera from either the JP 6313027 or the Shepard reference. Therefore, Dostoomian must be modified to space the welding tip 2 a good distance from the worksheet in order to allow the wavelengths from a camera to obtain a proper thermal image of the weld. Such a modification would prevent the welding of the worksheet because the welding tip 2 no longer makes the necessary contact with the contact surface 32 of the worksheets. Thus, the teachings of the Dostoomian, JP 6313027, and Shepard references are not sufficient to render claim 13 prima facie obvious.

It is also not obvious to modify JP 6313027 in view of Moores and Chang to provide method for monitoring the quality of a weld being formed between first and second pieces of material as claimed in claim 13. Moores discloses a shielding

hood 10 that is constructed to provide the necessary low turbulent flow of shielding gas around the weld regions (See Col 1, lines 37-43 and Col. 2, lines 4-17). However, to modify JP 6313027 in view of teachings of Moore would change the principle operation of JP 6313027, because the heating shield of Mooore prevents obtaining a thermal image using a camera from the JP 6313027. Moore teaches away from such a combination, because the shielding hood 10 is needed to provided the low turbulent flow of shielding gas around the weld regions during the welding process. Thus, the teachings of the JP 6313027, Moore, and Chang references are not sufficient to render claim 13 prima facie obvious.

Therefore, in view of the above-mentioned reasons, Claim 13 is allowable. Claims 14-21 and 24 depend from claim 13 and are therefore allowable as depending from an allowable claim and for the specific features recited therein.

New claim 25, which depends from claim 1, should be allowed for the same reasons as claim 1 and also for the additional feature that the step of heating the first and second pieces at their location of abutment to form a pool of material at the location of abutment which pool of material forms a weld between the pieces is performed by moving a beam of electromagnetic energy over the path of the weld pool multiple times. None of the other prior art, either alone or in combination, disclose or suggest this feature and all of the limitations of claim 1. Thus, claim 25 is allowable.

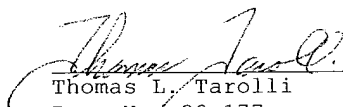
New claim 26, which depends from claim 1, should be allowed for the same reasons as claim 1 and also for the

additional feature that the first piece absorbs the heat from the laser beam and heats the second piece. None of the other prior art, either alone or in combination, disclose or suggest this feature and all of the limitations of claim 1. Thus, claim 26 is allowable

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

  
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